Claims

I claim:

1. A contact button configured to move along a resistor path of a potentiometer in a first direction and a second direction opposite the first direction, the contact button comprising:

a body including a first end configured to lead the body when the contact button moves in the first direction, and a second end configured to lead the body when the contact button moves in the second direction, at least one of the first and second ends being generally wedge-shaped to facilitate moving debris out of a path of the contact button as the contact button moves along the resistor path.

2. The contact button of claim 1, wherein the body defines a longitudinal axis and is elongated in a direction substantially parallel to the longitudinal axis.

3. The contact button of claim 2, wherein the body has a length dimension defined along the longitudinal axis, the length dimension being at least about 3.0 mm.

4. The contact button of claim 2, wherein the body has a width dimension defined transverse to the longitudinal axis, the width dimension being no more than about 1.8 mm.

5. The contact button of claim 2, wherein the first end is defined by

a first sidewall portion oblique to the longitudinal axis;

a second sidewall portion oblique to the longitudinal axis; and

an apex portion interconnecting the first and second sidewall portions.

6. The contact button of claim 5, wherein the apex portion has a radius of no more than about 0.40 mm.

7. The contact button of claim 5, wherein each of the first and second sidewall portions define an angle θ with the longitudinal axis, θ being at least about 11°, but no more than about 23°.

8. The contact button of claim 5, wherein the first end is further defined by

a surface substantially transverse to the first sidewall portion, the second sidewall portion, and the apex portion;

a first side edge portion interconnecting the surface and the first sidewall portion; and

a second side edge portion interconnecting the surface and the second sidewall portion.

9. The contact button of claim 8, wherein at least one of the first and second side edge portions have a radius of no more than about 0.20 mm.

10. The contact button of claim 8, further comprising a leading edge portion interconnecting the apex portion and the surface, the leading edge portion having a radius of no more than about 0.20 mm.

11. The contact button of claim 8, wherein the surface has a radius of at least about 15 mm in a direction extending along the longitudinal axis.

12. The contact button of claim 1, wherein both the first and second ends are generally wedge-shaped.

13. A fuel level sending unit, comprising:

a float;

a wiper coupled to the float, the wiper being responsive to movement of the float;

a resistor plate having a resistor path thereon; and

a button coupled to the wiper for sliding movement along the resistor path in a first direction and a second direction opposite the first direction, the button including a first end configured to lead the button when moving in the first direction, and a second end configured to lead the button when moving in the second direction, both of the first and second ends being generally wedge-shaped to facilitate moving debris out of a path of the button as the button moves along the resistor path.

14. The fuel level sending unit of claim 13, wherein the button defines a longitudinal axis and is elongated in a direction substantially parallel to the longitudinal axis.

15. The fuel level sending unit of claim 14, wherein the button has a length dimension defined along the longitudinal axis, the length dimension being at least about 3.0 mm.

16. The fuel level sending unit of claim 14, wherein the button has a width dimension defined transverse to the longitudinal axis, the width dimension being no more than about 1.8 mm.

17. The fuel level sending unit of claim 14, wherein the first end of the button is defined by

a first sidewall portion oblique to the longitudinal axis;

a second sidewall portion oblique to the longitudinal axis; and

an apex portion interconnecting the first and second sidewall portions.

18. The fuel level sending unit of claim 17, wherein the apex portion of the button has a radius of no more than about 0.40 mm.

19. The fuel level sending unit of claim 17, wherein each of the first and second sidewall portions of the button define an angle θ with the longitudinal axis, θ being at least about 11°, but no more than about 23°.

20. The fuel level sending unit of claim 17, wherein the first end of the button is further defined by

a surface substantially transverse to the first sidewall portion, the second sidewall portion, and the apex portion;

a first side edge portion interconnecting the surface and the first sidewall portion; and

a second side edge portion interconnecting the surface and the second sidewall portion.

21. The fuel level sending unit of claim 20, wherein at least one of the first and second side edge portions of the button have a radius of no more than about 0.20 mm.

22. The fuel level sending unit of claim 20, further comprising a leading edge portion interconnecting the apex portion and the surface, the leading edge portion having a radius of no more than about 0.20 mm.

23. The fuel level sending unit of claim 20, wherein the surface of the button has a radius of at least about 15 mm in a direction extending along the longitudinal axis.

24. A fuel level sending unit, comprising:

a float;

a wiper coupled to the float, the wiper being responsive to movement of the float;

a resistor plate having a resistor path thereon;

a plurality of resistor traces coupled to the resistor plate and positioned along the resistor path in spaced increments; and

a button coupled to the wiper for sliding movement along the resistor path in a first direction and a second direction opposite the first direction, the button including an arcuate surface configured to slide along the resistor path and span the increment between two adjacent resistor traces such that a jouncing motion of the button is substantially prevented as the button moves along the resistor path.

25. The fuel level sending unit of claim 24, wherein the button defines a longitudinal axis and is elongated in a direction substantially parallel to the longitudinal axis.

26. The fuel level sending unit of claim 25, wherein the button has a length dimension defined along the longitudinal axis, the length dimension being at least about 3.0 mm.

27. The fuel level sending unit of claim 25, wherein the surface of the button is arcuate in a longitudinal direction and has a radius of at least about 15 mm.

28. The fuel level sending unit of claim 24, wherein the increment between two adjacent resistor traces is about 0.2 mm.

29. A method for removing debris from a pathway of a button traveling along a resistor path of a potentiometer, the method comprising:

providing a button having a wedge-shaped end;

moving the button along the resistor path in a first direction such that the wedge-shaped end leads the button along the resistor path; and

moving debris away from a pathway of the button with the wedge-shaped end.

30. The method of claim 29, further comprising contacting debris on the resistor path with an apex portion of the wedge-shaped end, and wherein moving debris with the wedge-shaped end of the button includes moving debris away from the pathway of the button with at least one of a first sidewall portion of the button adjacent the apex portion, and a second sidewall portion of the button adjacent the apex portion.

31. The method of claim 29, further comprising:

providing a second wedge-shaped end on the button; and

moving the button along the resistor path in a second direction such that the second wedge-shaped end leads the button along the resistor path; and

moving debris away from the pathway of the button with the second wedge-shaped end.

32. The method of claim 31, further comprising:

contacting debris on the resistor path with a second apex portion of the second wedge-shaped end; and

moving the debris away from the pathway of the button with at least one of a third sidewall portion of the button adjacent the second apex portion, and a fourth sidewall portion of the button adjacent the second apex portion.

33. A fuel level sending unit, comprising:

a float;

a wiper coupled to the float, the wiper being responsive to movement of the float;

a resistor plate having a resistor path thereon; and

a button coupled to the wiper for sliding movement along the resistor path, the button including

an arcuate surface, wherein at least a portion of the surface is in sliding contact with the resistor path; and

an edge portion tangent with the arcuate surface, the edge portion and the resistor path defining an edge gap therebetween of no more than about 0.10 mm.

34. The fuel level sending unit of claim 33, wherein the button defines a longitudinal axis and is elongated in a direction substantially parallel to the longitudinal axis.

35. The fuel level sending unit of claim 34, wherein a first end of the button is defined by

a first sidewall portion oblique to the longitudinal axis;

a second sidewall portion oblique to the longitudinal axis; and

an apex portion interconnecting the first and second sidewall portions.

36. The fuel level sending unit of claim 35, wherein the edge portion is one of a leading edge portion interconnecting the apex portion and the arcuate surface, a first side edge portion interconnecting the arcuate surface and the first sidewall portion, and a second side edge portion interconnecting the arcuate surface and the second sidewall portion.

37. The fuel level sending unit of claim 36, wherein at least one of the leading edge portion, the first side edge portion, and the second side edge portion has a radius of no more than about 0.20 mm.

38. The fuel level sending unit of claim 33, wherein the edge portion is defined by an arc, and wherein the edge gap is measured from the resistor path to a midpoint of the arc in a direction normal to the resistor path.